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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,917	09/11/2003	Robert P. Freese	9409-3	8346

7590 11/14/2006  
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EXAMINER
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CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/661,917

Applicant(s)

FREESE ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18, 21-35 and 38-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 21-35 and 38-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7.12/04; 1.2.4.5/05; 7.8.8/06.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-47 (original), in the reply filed on 06/23/2006, and 08/17/2006, now amended to include claims 1-18, 21-35, 38-45, is acknowledged.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, 15-16, 21-23, 31-32, are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5,620,817 (Hsu et al., hereinafter referred to as Hsu).

Hsu, in the abstract, in col 3, lines 1-42, discloses a method of fabricating optical microstructures (attenuating phase shifting regions and opaque regions on the photomask substrate, that are polygonal in shape) includes i) illuminating using UV light exposure through a transparent substrate, wherein the substrate includes microstructures formed on the substrate (microstructures adjacent the substrate), and a negative photoresist layer (radiation sensitive layer) formed on the microstructures such that the microstructures are buried in the negative photoresist layer on the transparent substrate (see figure 2), ii) exposing the negative photoresist layer to radiation such that the exposed portions remain after development, wherein the photoresist layer is formed

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of variable thickness, such that portions of the photoresist layer having a minimum thickness is thicker than the microstructures, and the microstructures are independent of the variable thickness of the photoresist layer (claims 1-3, 5, 15-16, 21-23, and 31-32).

4. Claims 1-9, 14-18, 21-26, 31-35, 38-41, and 43-45, are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 4,965,118 (Kodera et al., hereinafter referred to as Kodera).

Kodera, in col 6, lines 5-68, in col 7, lines 1-24, and lines 42-45, in col 8, lines 15-68, in col 9, lines 60-65, discloses forming patterns of optical information recording medium (optical microstructures that are polygonal) by using a flexible substrate (flexible disk), forming a hardenable resin (negative photoresist) that may include additives (photosensitizers, impurities) on the supporting layer (that is transparent to UV radiation, transmits UV light through), and forming the resin on the microstructures (microstructures buried in the liquid resin layer, resin mold), exposing to UV through the transparent flexible supporting layer (substrate), wherein the resin liquid layer thickness is non-uniform (liquid hardenable resin is applied on the uneven surface) and thicker than the pattern on the resin mold, and the pattern on the mold is independent of the variable thickness of the resin liquid applied, positioning the substrate on rollers such that resin liquid layer is on the cylindrical platform (roller), and the substrate (transparent supporting layer) is remote from the platform, and is impinged with UV radiation so as to perform an imaging process to form the corresponding pattern that is not distorted (no deformation) on the hardenable resin, and the substrate is conveyed by means of a

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conveyor (translating the substrate relative to the light), wherein the cylindrical platform (roller) is rotating while rastering the radiation through the transparent supporting layer axially (see figures 5, and 6) (claims 1-9, 14, 16-17, 21-26, 31-33, and 39-41). Koder, in col 8, lines 1-60, and in figures 4A, 4B, and 6, discloses that the microstructure includes a base portion and a top portion such that the top portion is narrower than the base, imaging the hardenable resin with UV to form a microstructure (imaged, cured) in the liquid resin such that the base portion is adjacent to the substrate (transparent supporting layer, see figure 5) (claims 4, and 38). Koder, in col 7, lines 1-12, and in col 8, lines 34-37, discloses forming a hardenable resin liquid (negative photoresist layer) on the uneven pattern of the information to be recorded, followed by hardening (exposure) and developing to form the resin mold (microstructure master) (claims 15, 34, and 44). Koder, in col 6, lines 7-67, in col 7, lines 1-24, in col 8, lines 32-53, and in figures 1-8, discloses that the resin mold (master microstructure) is used to form stampers (second generation stampers), and the stampers are used to form microstructures (third generation microstructures) (claims 18, 35, and 45).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 10, 27, 42, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,965,118 (Kodera et al., hereinafter referred to as Kodera) in view U. S. Patent No. 5,620,817 (Hsu).

Kodera is discussed in paragraph no. 4.

The difference between the claims and Kodera is that Kodera does not disclose that the radiation beam amplitude is varied (claims 10, 27, and 42).

Hsu, in col 3, lines 15-35, discloses that the intensity of the exposure light is adjusted during the exposure process (i.e., constantly adjusting the intensity of light is same as varying the amplitude of the exposure beam impinged).

Therefore, it would be obvious to a skilled artisan to modify Kodera by employing the method of varying the intensity of the exposure light during exposure as taught by Hsu because Hsu, in col 3, lines 20-32, discloses that the intensity of the light exposure is adjusted so as to control the amount of exposure in the regions to be exposed and to block the light from exposing undesired regions of the negative photoresist layer.

7. Claims 11-13, and 28-30, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,965,118 (Kodera et al., hereinafter referred to as Kodera) in view of U. S. Patent No. 4,087,300 (Adler) and U. S. Patent No. 5,342,737 (Georger, Jr. et al., hereinafter referred to as Georger).

Kodera is discussed in paragraph no. 4.

The difference between the claims and Kodera is that Kodera does not disclose

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that the substrate is about a square foot, and that the radiation is impinged for about an hour.

Adler, in col 7, lines 45-54, discloses that the flexible substrate is approximately about 100 feet to about 1000 feet (i.e., an area of at least on square feet) (claims 11, and 28). Adler, in col 8, lines 46-65, discloses that the resin is cured for more than an hour (claims 12-13, and 29-30)

The difference between the claims and Koderia in view of Adler is that Koderia in view of Adler does not disclose that at least about one million microstructures are fabricated.

Georger, in col 11, lines 45-55, discloses that batches per exposure produce at least about 730 million microstructures (microcylinders).

Therefore, it would be obvious to a skilled artisan to modify Koderia by employing the substrate parameters and resin cure time suggested by Adler because Adler, in col 8, lines 46-68, discloses that curing the resin coated plastic substrate of the claimed length on a mandrel for the claimed time ensures a well bonded resin layer with excellent resistance to organic solvents, and blistering, and in col 7, lines 45-57, discloses that the size of the plastic substrate to be rolled on the mandrel is not critical and is based on only the capabilities of the equipment at hand. It would be obvious to a skilled artisan to modify Koderia in view of Adler by employing the method of making at least millions of microstructures as suggested by Georger because Georger, in col 7, lines 51-68, discloses that the support structure (substrate) may be of any shape or size and is depended upon the intended use of the array of microstructures to be formed on

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the support surface, and Georger, in col 11, lines 10-40, discloses that the millions of microstructures formed enables the use of the resultant product to used as electron emitters or as carriers for the controlled release of active agents (microsyringes, microvials etc).

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

November 7, 2006.

  
**JOHN A. MCPHERSON**  
**PRIMARY EXAMINER**